

CLAIMS

We Claim:

- 5 1. A process for application of powder coatings to conductive and non-conductive surfaces comprising
 - a) covering the surface with material which absorbs high-energy radiation within a wavelength in the range of 250 to 2,500 nm and having heating rates of more than 50°C per second and
 - 10 b) applying a powder coating composition to the covered surface and melting and curing the applied powder coating composition with NIR radiation.
- 15 2. The process according to claim 1 wherein the material is selected from the group consisting of carbon, graphite, magnetite, iron oxide, iron oxide black, tin oxide and antimony oxide.
- 20 3. The process according to claim 2 wherein the material is selected from the group consisting of carbon and graphite.
4. The process according to claim 1 wherein the heating rate is in the range of more than 65°C per second.
- 25 5. The process according to claim 1 wherein the covering step is realized by means of flaming or in-moulding procedures and with a layer thickness in the range of 0.1 to 10 μm .
- 30 6. The process according to claim 5 wherein the covering step is realized with a layer thickness in the range of 0.5 to 1 μm .
7. The process according to claim 1 wherein step (b) follows immediately after step (a).

8. The process according to claim 1 wherein NIR irradiation at a wavelength between 800 and 1200 nm and with an intensity of more than 1 W/cm² is used to melt and cure the coating composition.
- 5 9. The process according to claim 1 wherein a combination of NIR radiation and UV radiation is used to melt and cure the coating composition.
- 10 10. The process according to claim 1 wherein the surface is selected from the group of metal substrates, transparent organic and inorganic substrates and temperature sensitive substrates.
11. The process according to claim 10 wherein the surface is a thick metal substrate having a thickness of 3 mm or more.
- 15 12. A coated surface prepared by a process wherein the surface is covered with material which absorb high-energy radiation within a wavelength in the range of 250 to 2,500 nm and having a heating rate of more than 50°C per second; and then applying a powder coating composition to the covered surface and melting and curing the applied powder coating composition with NIR radiation.
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